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EXAMINER	
BELIVEAU, SCOTT E	

ART UNIT	PAPER NUMBER
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/537,022	KIMBROUGH ET AL.	
	Examiner	Art Unit	
	Scott Beliveau	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 20-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 20-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings were received on 25 August 2003. These drawings are disapproved as indicated by the subsequent objections for which proposed corrections do not appear to address.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because of the following:

   - Reference character "172" has been used to designate both the "CATV connector" and the "DBS connector" (Figure 9; Page 36, Line 9);
   - Reference character "56" has been used to designate both the "ringing SLICs" (Page 39, Line 13) and the "POTS lines" (Figures 10-11; Page 17, Line 16);

   A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "drop processor unit" of claim 17 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. The examiner is unclear as to which element in the drawings the "drop processor unit" is referencing as the embodiment contains a number of "processors" none of which are labeled as a "drop processor unit". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Response to Arguments

4. The OFFICIAL NOTICE stating that it is notoriously well known in the art for CATV television signals to occupy a bandwidth of "approximately 60 to 750 megahertz" was not traversed and is accordingly taken as an admission of the fact noted.

5. The OFFICIAL NOTICE stating that it is notoriously well known in the art for the "length of the transport fibers" to be less than "approximately 33,000 feet" was not traversed and is accordingly taken as an admission of the fact noted.

6. The OFFICIAL NOTICE stating that it is notoriously well known in the art for the "length of the drop fibers" to be less than "approximately 3,3000 feet" was not traversed and is accordingly taken as an admission of the fact noted.

7. Applicant's arguments with respect to claims 1-17 and 20-31 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Stalley et al. reference discloses a passive fiber network which distributes voice and video to/from the central office/headend to a "plurality of home network units" [9] (Figure 2). However, it does not disclose nor particularly teach away from the use of alternative communication frequency bands. The Foltzer reference illustrates a similar up-stream/down-stream frequency technique in Figure 1; however, it teaches that this method is limited in so far as it only

provides two transmission bands to handle the three required transmissions. Accordingly, the reference discloses that an improved method to the two-transmission band problem would be to utilize frequency allocations as illustrated in Figure 2. The reference does not teach away from the method of Figure 2, in so far as a statement that a first product is somewhat inferior to another product for the same use does not teach away when the reference also discloses the at the first offers acceptable advantages. *In re Gurley*. 27 F. 3d 551.533.31 USPQ 2d 1130.131 (Fed. Cir. 1994) In this case, the embodiment of Figure 2, while according to Foltzer may be inferior to that of Figure 4, does provide advantages over the up-stream/down-stream frequency allocation of Figure 1 utilized by Stalley et al.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1, 2, 6-8 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussänger (US Pat No. 5,202,780), in view of Fisher et al. (DE 4328484).

In consideration of claim 1, Figure 1 illustrates a system for transporting "voice, video, and data signals" between a "central office" and a plurality of subscribers [180]. The embodiment comprises "optical video distribution circuitry" [11] that is operable to combine "analog television signals" and "digital television signals" into a "combined optical video signal at a first wavelength" centered around 1500 or 1550 nm (Col 2, Lines 50-63; Col 4, Lines 62-64). While the reference does not explicitly disclose the particular bandwidth/frequency associated with the "analog" and "digital television signals" it is well known in the art if not inherent that "analog television signals occupy a first bandwidth" (ex. 60 to 70 MHz) and "digital television signals" which "occupy a second bandwidth that is at a higher frequency than the first bandwidth" (ex. 950 to 2050MHz). The embodiment further comprises "telephony/data distribution circuitry" [12] which is operable to "combine telephony packet signals and data packet signals into combined optical telephony data packet signals at a second wavelength" centered around 1300 nm (Col 2, Line 64 – Col 3, Line 6; Col 4, Lines 62-64), "optical multiplexing circuitry" [15] (Col 3, Lines 45-61), a "passive optical network" [1] (Col 6, Lines 49-53), and a plurality of "home network units" (Figure 3) that are operable to "receive", "de-multiplex", and "convert" the aforementioned "corresponding signals" (Col 4, Lines 23-43).

The aforementioned "home network units" are further operable to "transmit" a "combined optical telephony/data packet signals over the passive optical network to the central office at a second wavelength" centered on 1300 nm (Col 4, Lines 43-54). It is noted,

that while the examiner makes reference to particular wavelengths, the claim is not limiting as to the usage of any particular transmission wavelength. The reference does not explicitly disclose, nor preclude the use of "echo cancellation circuits" in conjunction with the "home network units". The Fisher et al. reference discloses the use of a "echo cancellation" circuit in conjunction with a broadband ISDN passive system that is operable to "monitor echo signals" associated with the "second wavelength" or upstream frequency and to subsequently "inject an echo cancellation signal" (Abstract). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the "home network unit" or subscriber terminal so as to include an "echo cancellation circuit" for the purpose of advantageously reducing upstream noise associated with upstream signaling subsequently reducing data transmission errors and improving the quality of upstream voice communications.

Claim 2 is rejected wherein the embodiment comprises an "optical multiplexer" [11] that is operable to combine the "analog television signals and the digital television signals" (Col 2, Lines 50-63). The embodiment further comprises a "first optical stage" [20] (Col 2, Lines 44-49; Col 4, Lines 5-22).

Claim 6 is rejected wherein the Fussänger reference discloses that the aforementioned "first wavelength is approximately 1550 nanometers" (Col 2, Lines 50-63).

In consideration of claims 7 and 8, the Fussänger reference does not explicitly disclose that the bandwidth of the "analog television signals occupy a bandwidth of approximately 50 to 750 megahertz" or the "digital television signals occupy a bandwidth of approximately 950 to 2050 megahertz". However, it would have been obvious to one having ordinary skill

in the art at the time the invention was made as to the usage of the aforementioned bandwidth since it was known in the art that "analog television signals" and "digital television signals" utilize a bandwidth of approximately 50 to 750 MHz and a bandwidth of approximately 950 to 2050 MHz respectively.

Claim 29 is rejected the "home network units" of Stalley et al. comprise connections for servicing televisions [12], and telephones [15]. The Etheridge et al. reference discloses that the "home network unit" [56] may further comprise a connection to a "computer" [10].

11. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussänger (US Pat No. 5,202,780), in view of Fisher et al. (DE 4328484), and in further view of Ortel (US Pat No. 5,861,966).

In consideration of claim 3, the Fussänger et al. reference as aforementioned discloses the use of a passive optical network that comprises a "splitter" [22], fiber amplifiers for downstream amplification (Col 6, Lines 40-53) and further connects a plurality of subscribers via individual fibers (Figure 1). The reference does not explicitly illustrate the usage of "additional optical booster states", however the usage of such is known in the art. Figure 4 of the Ortel reference illustrates the use of "optical booster stages" [429] which are coupled to the "output of the splitter" as described in conjunction with Figure 3 (Col 5, Lines 21-36). Accordingly, it would have been obvious to one of ordinary skill in the art to utilize "splitters" and "optical booster stages" as shown in Ortel in conjunction with the Fussänger PON since it is inherent to the operation of optical systems that the introduction of splitters in the network introduces losses in the output signals. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the need to further

introduce "optical booster stages" to counteract the losses associated with the splitters for the purpose of ensuring that the downstream subscribers receive the proper signal strength.

Claim 4 and 5 are rejected wherein the Ortel et al. reference discloses the use of "Erbium-doped fiber" amplifiers (Col 5, Lines 21-32).

12. Claims 24-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Fussänger (US Pat No. 5,202,780), in view of Fisher et al. (DE 4328484), and in further view of Mahony (US Pat No. 6,427,035).

In consideration of claim 24, the aforementioned Fussänger et al. reference discloses a passive optical distribution network (Figure 1) that comprises a plurality of fibers connected to a "home network unit". The reference however, does not provide sufficient details as to the connectivity of the network to the subscriber. The Mahony et al. reference discloses a fiber optic deployment for a FTTH implementation. In particular, the network comprises a "plurality of transport fibers" [102a/106a] (Col 8, Lines 22-30), a "plurality of drop fibers" [110], and a "plurality of passive optical splitters" [104] that are coupled between the "transport fibers and the drop fibers" as illustrated in Figure 1a. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the illustrative Mahony et al. fiber optic deployment in conjunction with the aforementioned combined references for the purpose of providing a fiber distribution architecture that provides continuous uninterrupted fiber optic service from a service provider central office to the subscriber premises (Mahony: Col 2, Lines 17-22).

Claim 25 is rejected wherein the aforementioned "optical splitters" [104] are at least "4 to 1 splitters" (Col 8, Lines 32-41).

In consideration of claim 26, the Mahony et al. reference does not explicitly disclose the length of the "transport fibers" [102a/106a]. It would have been obvious to one having ordinary skill in the at the time the invention was made to utilize a "length of the transport fibers" to be less than "approximately 33,000 feet" since it was known in the art to do such for the purpose of negating the effects of signal loss or propagation errors developed within the transport fiber.

In consideration of claim 27, the Mahony et al. reference does not explicitly disclose the length of the "plurality of drop fibers" [110]. It would have been obvious to one having ordinary skill in the at the time the invention was made to utilize a "length of the drop fibers" to be less than "approximately 3,300 feet" since it was known in the art to utilize such for the purpose enabling the upstream "home network unit" transmitter to use lower power optical transmitters thus reducing the cost of each unit.

13. Claims 1-2, 6-17, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stalley et al. (US Pat No. 5,479,286), in view of Foltzer (US Pat No. 5,969,836), in view of Ethridge et al. (WO 98/34379), and in further view of Fisher et al. (DE 4328484).

In consideration of claim 1, the Stalley et al. reference discloses a passive fiber network which distributes voice and video to/from the central office/headend to a "plurality of home network units" [9] (Figure 2). As illustrated in Figure 2, the embodiment includes: "optical video distribution circuitry" [5/1] for combining the aforementioned "analog television signals" which is known in the art to occupy a "first bandwidth" (ex. 60 to 70 MHz) and "digital television signals" which "occupy a second bandwidth that is at a higher frequency than the first bandwidth" (ex. 950 to 2050MHz) and distribute them at a "first wavelength"

of 1550 nm (Col 3, Lines 13-28; Col 5, Lines 5-11), "telephony distribution circuitry" [6], "optical multiplexing circuitry" [5] for combining the aforementioned signals, a "passive optical network" [3'], and a "plurality of home network units" [9] for converting the "downstream multiplexed optical signals" into "television signals" [12] (Col 4, Lines 59-64; Col 5, Lines 5-11) and "telephone signals" [15].

The Stalley et al. embodiment does not utilize a combined "first" and "second wavelength" in the up-stream direction as required by the claim. Rather, the reference discloses that combined video and telephony are transmitted in the upstream direction at 1550 nm and transmitted in downstream direction at a frequency of 1300 nm (Col 4, Lines 38-42). However, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the claimed "first wavelength" and "second wavelength" distribution method as it was known in the art for optical distribution systems to utilize for the purpose of improving distribution efficiency.

The Foltzer reference provides evidence as to the use of the advantageous usage of the "first" and "second wavelength" over the particular wavelength transmission means of Stalley et al. wherein a single wavelength is utilized in each direction, which is characterized as being an inefficient use of signal distribution over a single fiber. The reference discloses that "conventional systems" as illustrated in Figure 2 utilize an optical communication system for the distribution of both telephony and video signals using "optical multiplexer to combine and transmit a combined "first wavelength" video signal with a "second wavelength" telephony signal (Col 2, Lines 50-55). Such a system is described as an improvement over the method of Figure 1, however, the reference does not explicitly teach

away from the use of such a system in that the "conventional" is characterized as a valid method for the transmitting of both upstream and downstream telephony that is an improvement over Figure 1 (Col 1, Lines 59-67 – Col 2, Lines 1-13) and furthermore is disclosed to provide an advantage in that conventional couplers may be utilized (Col 4, Lines 5-13).

As to the recited limitation such that "packet data signals" are further distributed over the network, the Stalley et al. reference suggests the distribution of interactive services, but does not explicitly disclose the use of packetized data (Col 4, Lines 5-10). However, the use of such in conjunction with passive optical networks has been well established in the art as further outlined in the International Telecommunication Union recommendation article (ITU-T G.983.1 Broadband optical access systems based on Passive Optical Networks). An example of such a system is illustrated in Figure 4 of the Etheridge et al. reference. It is well known in the art that subscribers often tie up the telephone when connecting to the Internet. The Ethridge et al. reference teaches subsequently that there is a need for a method of providing users with connections to the Internet without tying up the voice paths in the local central office switching equipment (Page 5, Lines 6-20). Accordingly, it would have been obvious to one of ordinary skill in the art to modify the Stalley et al. reference to further utilize the "packet data signal" techniques in conjunction with a optical fiber network as suggested by Etheridge et al. for the purposes of facilitating connections to the internet which do not tie up the central office and further makes better use of fiber optic distribution facilities (Etheridge et al.: Page 5, Lines 11-21). While the Etheridge et al. reference is directed at a FTTC ONU implementation, it is recognized in the art that teachings pertaining

to FTTC implementations are pertinent to FTTH implementations given that the aforementioned implementations are differentiated based on the number of units served by the ONU (ITU-T G.983.1 – Section 5).

With respect to the newly added limitations, the Stalley et al. reference illustrates that the "home network units comprise circuitry for transmitting combined optical telephony/data packet signals over the passive optical network to the central office at the second wavelength" [11/14]. The reference, however, does not explicitly disclose nor preclude the further usage of an "echo cancellation circuit". However, the use of such in conjunction with passive optical communications is known in the art. The Fisher et al. reference discloses the use of a "echo cancellation" circuit in conjunction with a broadband ISDN passive system that is operable to "monitor echo signals" associated with the "second wavelength" or upstream frequency and to subsequently "inject an echo cancellation signal" (Abstract). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the "home network unit" or subscriber terminal of Stalley et al. so as to further include an "echo cancellation circuit" for the purpose of advantageously reducing upstream noise associated with upstream signaling subsequently reducing data transmission errors and improving the quality of upstream voice communications.

Claim 2 is rejected wherein the Stalley et al. reference comprises an "optical multiplexer" [5] that is operable to combine the "analog television signals and the digital television signals" (Col 3, Lines 13-35; Col 5, Lines 5-11). The embodiment further comprises a "first optical stage" (Col 3, Lines 3-6).

Claim 6 is rejected wherein the Stalley et al. reference discloses that the aforementioned "first wavelength is approximately 1550 nanometers" (Col 4, Lines 40-42).

In consideration of claim 7, the Stalley et al. reference does not explicitly disclose bandwidth utilized by the "analog television signals". It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the claimed bandwidth since it was known in the art that analog television signals such as those associated with broadcast television occupy a bandwidth of "approximately 60 to 750 megahertz". Accordingly, it would have been obvious to one of ordinary skill in the art that the aforementioned embodiment would expect to utilize such a bandwidth for the purpose of enabling the distribution of analog television signals (Col 5, Lines 5-11).

Claim 8 is rejected wherein the reference discloses that the satellite or "digital television signals occupy a bandwidth of approximately 950 to 2050 megahertz" (Col 4, Lines 54-55).

Claim 9 is rejected wherein Figure 4 of the Etheridge et al. reference discloses a "telephony interface platform" [24], a "data switch" [72], and a "plurality of optical interface units" [50]. The "optical interface units" [54] is operable to "convert the telephony signals into packet telephony signals" [78]. A "packet" as defined by the Microsoft® Computer Dictonary 5th edition is simply "a unit of information transmitted as a whole from one device to another on a network". Accordingly, the examiner broadly interprets the telephony data as being "packetized" in conjunction with the PCM conversion. Alternative methods of "packetizing" the telephony data are referenced in conjunction with claim 20. The "optical interface units" [54] are further operable to "multiplex and demultiplex" [76] the data signals and convert them to/from optical signals.

Claim 10 is rejected wherein the Stalley et al. reference further comprises a "element management system" [8] which is coupled to the "telephony interface platform" [6].

Claim 11 is rejected wherein the "digital telephone switch" [78] is coupled to the "telephone interface platform" [24] via a "plurality of DS-1 telephony signals" as illustrated in Figure 4.

Claims 12 and 13 are rejected wherein the "data switch" [72] is an "Ethernet switch" which is coupled to a plurality of "optical interface units" [54] via "100 Base T connections" [45] as illustrated in Figures 4-5 (Page 21, Lines 17-25).

In consideration of claim 14, the aforementioned Stalley et al. reference discloses a passive optical distribution network [3'] that comprises a plurality of fibers connected to a "home network unit" [9]. The reference, however, does not provide sufficient details as to the number of "transport fibers" connected to the "optical interface unit" [1]. Accordingly, the examiner relies on Figure 4 of the Etheridge et al. reference, wherein the "optical interface unit" [54] is coupled to "four or more of the transport fibers" [58].

Claim 15 is rejected wherein the Foltzer et al. reference as illustrated in Figure 15 discloses that the "second wavelength" utilized in the upstream communications is "1310 nm" (Col 2, Lines 14-16).

In consideration of claim 16, the Ethridge et al. reference does not explicitly disclose the use of the Point-to-Point Protocol over Ethernet service gateway in conjunction with the while 10-Base-T Ethernet connectivity. The use of such is well established in the art (as defined by RFC 2516). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Ethridge et al. reference to further utilize a

"PPPOE service gateway" for the purpose of supporting the concept of a "session" over the Ethernet similar to traditional cable modems so as to enable the service provider with the capability to charge customers based on connection time thus discouraging permanent connections and over-subscriptions to a service provider's IP address pool.

Claim 17 is rejected wherein the "optical network units" [56] of Etheridge et al. further comprises a "drop processor" [184] that is operable to the couple it to the "telephony interface platform" [24].

Claim 29 is rejected the "home network units" of Stalley et al. comprise connections for servicing televisions [12], and telephones [15]. The Etheridge et al. reference discloses that the "home network unit" [56] may further comprise a connection to a "computer" [10].

Claims 30 and 31 are rejected wherein the aforementioned connection to the "computer" [10] is an Ethernet 10Base-T connection as illustrated in Figure 4.

14. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stalley et al. (US Pat No. 5,479,286), in view of Foltzer (US Pat No. 5,969,836), in view of Ethridge et al. (WO 98/34379), in view of Fisher et al. (DE 4328484), and in further view of Ortel (US Pat No. 5,861,966).

In consideration of claim 3, the Stalley et al. reference as aforementioned discloses the use of a passive optical network that comprises fiber amplifiers for downstream amplification (Col 3, Lines 4-8) and further connects a plurality of subscribers via individual fibers (Col 2, Lines 65-67). Accordingly, the reference implies the use of a "splitter" and associated "optical booster stages" comprising fiber amplifiers. Assuming arguendo, regarding the details of the overall network involving "splitters" and "optical booster stages", the examiner

relies on the representative architecture disclosed in the Ortel reference. As illustrated in Figure 4, the reference illustrates the use of "optical booster stages" [429] which are coupled to the "output of the splitter" as described in conjunction with Figure 3 (Col 5, Lines 21-36). Accordingly, it would have been obvious to one of ordinary skill in the art to utilize "splitters" and "optical booster stages" as shown in Ortel in conjunction with the Stalley et al. PON since it is inherent to the operation of optical systems that the introduction of splitters in the network introduces losses in the output signals. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the need to further introduce "optical booster stages" to counteract the losses associated with the splitters for the purpose of ensuring that the downstream subscribers receive the proper signal strength.

Claim 4 and 5 are rejected wherein the Ortel et al. reference discloses the use of "Erbium-doped fiber" amplifiers (Col 5, Lines 21-32).

15. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stalley et al. (US Pat No. 5,479,286), in view of Foltzer (US Pat No. 5,969,836), in view of Ethridge et al. (WO 98/34379), in view of Fisher et al. (DE 4328484), and in further view of Henley et al. (US Pat No. 5,526,353).

In consideration of claim 20, the aforementioned Ethridge et al. discloses that the embodiment may utilize PCM "packetized telephony signals" and "Ethernet packetized data signals". The reference, however, does not explicitly disclose that the PCM digital data packets may be subsequently converted to "Ethernet packet signals". The Henley et al. reference discloses a means wherein PCM audio samples are assembled into Ethernet packets (Col 7, Lines 4-11; Col 11, Lines 4-11). Accordingly, it would have been obvious to one of

ordinary skill in the art to modify the Etheridge et al. reference so as to encapsulate the PCM "packetized telephony signals" using an "Ethernet packet signal" as taught by Henley et al. for the purpose of ensuring that high quality voice communications are delivered to the subscriber by accounting for packet-based network variable transmission times (Henley et al.: Col 4, Lines 15-60).

Claim 21 is rejected wherein it would have been obvious to one of ordinary skill in the art at the time of the invention to further "identify whether a particular packet" belongs to a "packetized telephony signal or a packetized data signal" for the purpose of ensuring that the "packetized telephony signal" is given a higher routing priority given that subscribers are more sensitive to poor voice service/quality.

Claims 22 and 23 are rejected wherein the Ethridge et al. reference discloses the use of "Ethernet MAC addresses" for the routing of information signals as is known in the art (Page 44, Lines 10-11).

16. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stalley et al. (US Pat No. 5,479,286), in view of Foltzer (US Pat No. 5,969,836), in view of Ethridge et al. (WO 98/34379), in view of Fisher et al. (DE 4328484), and in further view of Ethridge et al. (US Pat No. 6,353,609).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a

showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The aforementioned Ethridge et al. (WO 98/34379) reference discloses that the embodiment may utilize PCM "packetized telephony signals" and "Ethernet packetized data signals". The reference, however, does not explicitly disclose that the PCM digital data packets may be subsequently converted to "Ethernet packet signals". The Ethridge et al. ('609) reference discloses a fiber access network for transporting voice and data signals in the local loop between a central office location and a plurality of remote local users. The reference teaches that PCM digital voice packets may be mapped to Ethernet packets and subsequently delivered (Col 6, Lines 13-23). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the teachings of Ethridge et al. ('609) such that the "packetized telephony signals" are "Ethernet packet signals" for the purpose of ensuring that voice packets are prioritized in order to ensure quality sound delivery (Ethridge et al.: Col 2, Lines 46-49).

17. Claims 24-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Stalley et al. (US Pat No. 5,479,286), in view of Foltzer (US Pat No. 5,969,836), in view of Ethridge et al. (WO 98/34379), in view of Fisher et al. (DE 4328484), and in further view of Mahony (US Pat No. 6,427,035).

In consideration of claim 24, the aforementioned Stalley et al. reference discloses a passive optical distribution network [3'] that comprises a plurality of fibers connected to a "home network unit" [9]. The reference however, does not provide sufficient details as to the connectivity of the network to the subscriber. The Mahony et al. reference discloses a fiber optic deployment for a FTTH implementation. In particular, the network comprises a "plurality of transport fibers" [102a/106a] (Col 8, Lines 22-30), a "plurality of drop fibers" [110], and a "plurality of passive optical splitters" [104] that are coupled between the "transport fibers and the drop fibers" as illustrated in Figure 1a. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the illustrative Mahony et al. fiber optic deployment in conjunction with the aforementioned combined references for the purpose of providing a fiber distribution architecture that provides continuous uninterrupted fiber optic service from a service provider central office to the subscriber premises (Mahony: Col 2, Lines 17-22).

Claim 25 is rejected wherein the aforementioned "optical splitters" [104] are at least "4 to 1 splitters" (Col 8, Lines 32-41).

In consideration of claim 26, the Mahony et al. reference does not explicitly disclose the length of the "transport fibers" [102a/106a]. It would have been obvious to one having ordinary skill in the at the time the invention was made to utilize a "length of the transport

fibers" to be less than "approximately 33,000 feet" since it was known in the art to do such for the purpose of negating the effects of signal loss or propagation errors developed within the transport fiber.

In consideration of claim 27, the Mahony et al. reference does not explicitly disclose the length of the "plurality of drop fibers" [110]. It would have been obvious to one having ordinary skill in the at the time the invention was made to utilize a "length of the drop fibers" to be less than "approximately 3,300 feet" since it was known in the art to utilize such for the purpose enabling the upstream "home network unit" transmitter to use lower power optical transmitters thus reducing the cost of each unit.

In consideration of claim 28, the Mahony et al. reference discloses that the "transport fibers" [106] may be spliced to the "splitter" [104] (Col 8, Lines 29-41). The Foltzer reference discloses that "passive optical splitters" may be "fusion spliced" (Col 2, Lines 47-50).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure as follows. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made.

- The Szechenyi et al. (US Pat No. 6,490,065) reference discloses a system for optically transmitting combined analog and/or digital television signals as well as

data and/or telephone signals over a passive optical distribution network and includes a method for blocking ingress noise.

- The Feldman et al. (US Pat No. 6,577,414) reference discloses a passive optical network that integrates signals carrying broadcast CATV services and telecommunication services into a FTTH/C network.
- The Hylton et al. (US Pat No. 5,708,961) reference discloses a full service optical network that is operable to deliver multiplexed packetized video and telecommunication services (Figures 8A/B).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Beliveau whose telephone number is 703-305-4907. The examiner can normally be reached on Monday-Friday from 8:00 a.m. - 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on 703-305-4795. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

SEB
October 31, 2003

JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600